

Lockheed Aircraft Corporation

ADVANCED DEVELOPMENT PROJECTS
BURBANK, CALIFORNIA

REPORT NO. SP-1306
DATE 1 Feb. 1968
COPY NO. 2

MODEL U-2R

TITLE PROGRESS REPORT - February 1, 1968 Meeting

PREPARED BY

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Vice President
Advanced Development Projects

REVISIONS

| DATE | PAGES AFFECTED |
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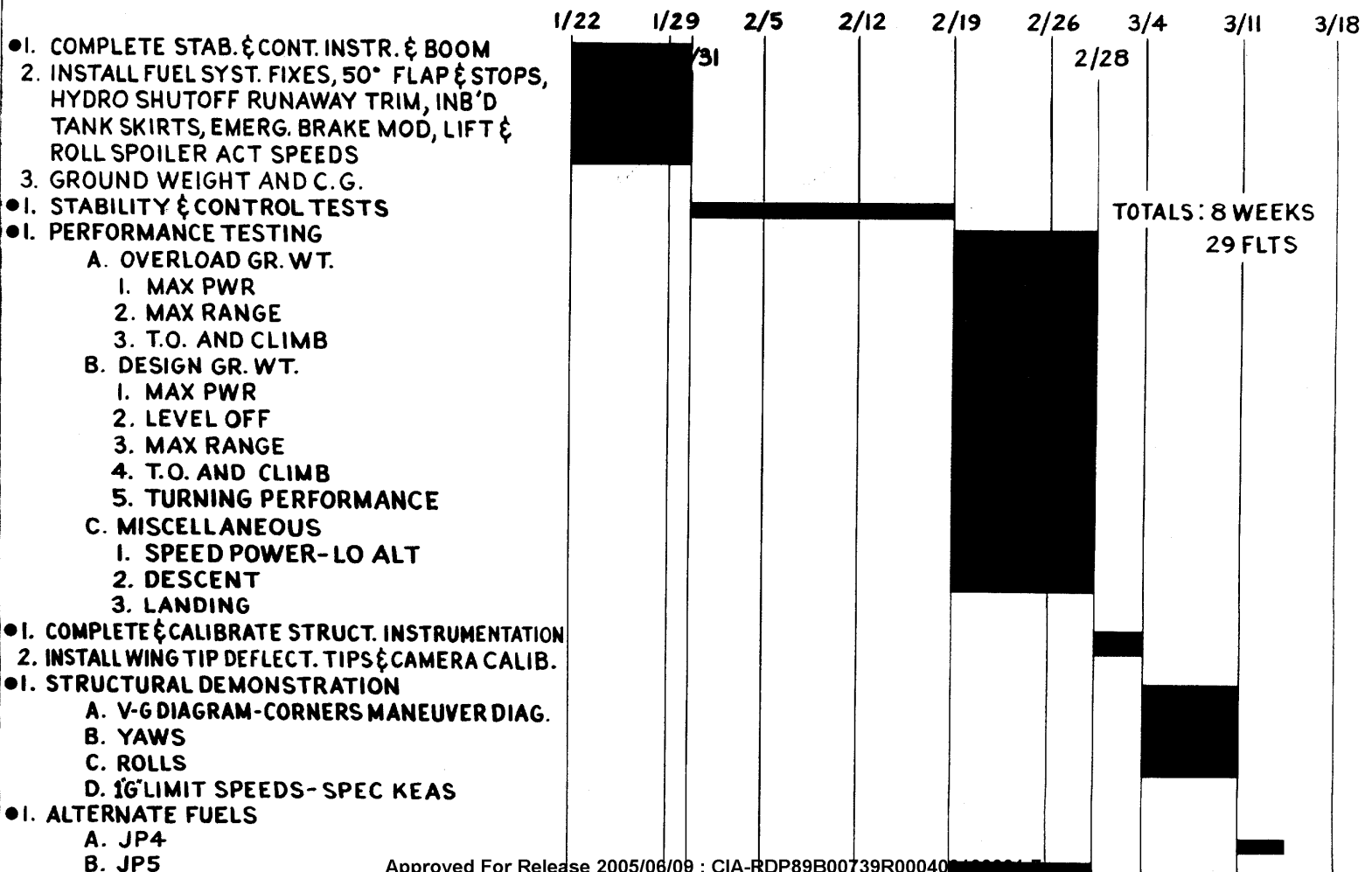
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AVAILABLE

U-2R FIRST AIRCRAFT TEST STATUS

| | NOV 9, 1967 | FEB 1, 1968 |
|---|---|-----------------|
| ● MONTHS FLIGHT TEST COMPLETED | 2.77 | 5.50 |
| ● ALLOTTED 7½ MONTHS EXPENDED | 37% | 73% |
| ● ESTIMATED TEST PROGRAM COMPLETED | 37% | 55% |
| ● DELIVERY DATE TO NORTH BASE | 8-16-67 | — |
| ● FIRST FLIGHT DATE | 8-28-67 | — |
| ● FLIGHTS TO DATE | 14 | 27 (1/30/68) |
| ● FLIGHT HOURS TO DATE | 30:09 | 79:10 (1/30/68) |
| ● MAXIMUM FLIGHT DURATION | 4:12 | 8:05 |
| ● MAXIMUM INDICATED AIRSPEED | <div style="border: 1px solid black; height: 80px; width: 100%;"></div> | |
| ● MAXIMUM TRUE MACH NUMBER | | |
| ● MAXIMUM ALTITUDE | | |
| ● MAXIMUM BANK ANGLE | | |
| (66,500 FT. NO BUFFET) 1.5°/SEC. TURN RATE | 20 DEG. | 30 DEG. |
| ● MAXIMUM T.O. GROSS WEIGHT | 31,400 | 31,700 |
| ● T.O. C.G. RANGE (GEAR DOWN) | 26 TO 29% | 26-30% |
| ● C.G. FLT. RANGE (GEAR UP) | 29 TO 29.4% | 23-30% |

S/N 051 SCHEDULE



U-2R STATUS REPORT

(1 OF 4)

| ITEM | PROBLEM | DISPOSITION |
|-------------------------|--|---|
| 1. CONSTANT SPEED DRIVE | <p>A. UNITS #2 AND #3 WERE KNOWN TO HAVE TWO INTERNAL BOLTS WITH SHORT THREADS. VENDOR REQUESTED UNITS BE RETURNED</p> <p>B. UNIT #6 DEVELOPED OIL LEAK DURING GROUND RUN. BLOWN GASKET DUE TO IMPROPER MACHINING ON HOUSING AT THERMAL DISCONNECT FLANGE.</p> <p>C. UNIT #10 HAD 6 DROPS PER MINUTE OIL LEAK AT MAGNETIC PLUG BOSS ON GEAR BOX.</p> | <p>A. RETURNED TO VENDOR FOR INSTALLATION OF CORRECT BOLTS</p> <p>B. RETURNED TO VENDOR FOR RE-MACHINING OF HOUSING FOR PROPER SEALING</p> <p>C. RETURNED TO VENDOR FOR REPAIR TO PREVENT LEAK.</p> |
| 2. HYDRO PUMP | <p>A. THREE UNITS EXPERIENCED LARGE PRESSURE DROP IN FLIGHT DUE TO FAILED COMPENSATOR SPRINGS. PRESSURE FLUCTUATIONS</p> | <p>A. A CONTINUOUS BLEED ADDED TO SYSTEM TO ELIMINATE NO-FLOW CONDITION AT PUMP. THIS REMOVED THE PRESSURE</p> |

CONT'D

(2 OF 4)

| ITEM | PROBLEM | DISPOSITION |
|--|--|---|
| | AT APPROX 17 CPS MEASURED AT PUMP OUTLET B. ONE UNIT HAD BROKEN SHAFT | FLUCTUATION AT THE PUMP OUTLET B. UNIT RETURNED TO VICKERS FOR INVESTIGATION |
| 3. HYDRAULIC TANK N ₂ _____ PRESSURE REGULATOR | A. IMPROPER REGULATION AND EXCESSIVE LOSS OF N ₂ . VALVE SEAT WOULD NOT SEAL AT 1800 PSI (5 UNITS) | A. REPLACE WITH NEW IN-LINE REGULATOR WITH 1800 PSI CAPABILITY. |
| 4. SPOILER SOLENOID VALVE _____ | A. VALVE LEAKED AND FAILED TO OPERATE. VALVE SUBJECT TO 4000 PSI PRESSURE FROM SPOILER ACCUMULATOR. VALVE CHATTERED WHILE FLOWING AT 3000 PSI. (2 UNITS) | A. PRESSURE RELIEF VALVE ADDED TO PREVENT SPOILER ACCUMULATOR BUILD-UP. FLOW RESTRICTOR ADDED TO ELIMINATE CHATTER. |
| 5. HYDRO PUMP PRESSURE _____ CHECK VALVE | A. VALVE STUCK OPEN DUE TO PRESSURE OSCILLATIONS. (10 UNITS) | A. CONTINUOUS BLEED SYSTEM ADDED TO HYDRO SYSTEM, ELIMINATING PRESSURE OSCILLATIONS. |

CONT'D

(3 OF 4)

| ITEM | PROBLEM | DISPOSITION |
|---------------------------------|--|--|
| 6. MAIN LANDING GEAR UP-LOCK | A. MAIN LANDING GEAR CYCLED IN AND OUT OF UP-LOCK WHEN GEAR WAS RETRACTED. UP-LOCK CYLINDER HOOK IS HELD IN UP-LOCK POSITION BY A SPRING. | REVISED TIMING ON UP-LOCK SWITCH TO REDUCE POSITION SENSITIVITY AND INCREASED SPRING LOAD ON UP-LOCK CYLINDER HOOK TO INCREASE HOOK ENGAGEMENT FORCE. |
| 7. BRAKE SYSTEM | A. BRAKE SYSTEM FAILED TO OPERATE DURING TAXI RETURN TO HANGAR ON AIRCRAFT 052. BRAKE VALVE OPERATION REQUIRED THAT D.C. POWER BE AVAILABLE TO L.G. SELECTOR VALVE AND/OR EMERGENCY BRAKE ACCUMULATOR SHUT-OFF VALVE THRU L.G. SELECTOR SWITCH IN COCKPIT. | A. REPLACED NORMALLY CLOSED BRAKE ACCUMULATOR SHUT-OFF VALVE WITH NORMALLY OPEN VALVE. D.C. POWER REQUIRED TO CLOSE SHUT-OFF VALVE AND SCISSORS SWITCH UTILIZED TO CUT-OFF D.C. POWER TO OPEN VALVE SO THAT EMERGENCY BRAKE SYSTEM IS PROTECTED AGAINST LEAKAGE UNTIL TOUCHDOWN. |

CONT'D

(4 OF 4)

| ITEM | PROBLEM | DISPOSITION |
|--------------------------------|--|---|
| 8. OXYGEN SYSTEM | <p>A. LOW OXYGEN PRESSURE ON #1 & #2 SYSTEM GAGES DUE TO EXCESS MOISTURE</p> <p>B. LOW OXYGEN PRESSURE ON #1 & #2 SYSTEM GAGES DUE TO INSUFFICIENT HEAT INPUT TO DEWAR PRESSURE BUILD-UP HEAT EXCHANGER.</p> <p>C. LOW OXYGEN PRESSURE ON #2 SYSTEM GAGE. FOUND NORMALLY CLOSED-PRESSURE OPENED VALVE LEAKING.</p> | <p>A. PURGE AND RECHARGE</p> <p>B. ADDED "BLAST TUBE" TO DIRECT COOLING AIR DISCHARGE FROM 718 T6 RECEIVER/TRANSMITTER OVER DEWAR BUILD-UP HEAT EXCHANGER.</p> <p>C. REPLACE PRESSURE OPENED VALVE.</p> |
| 9. OXYGEN SEAT PACK DISCONNECT | <p>A. PERSONAL OXYGEN LEADS BECAME DISCONNECTED ON SR-71. THIS IS THE SAME SYSTEM USED ON THE U-2R. THIS DISCONNECT HANDLES BOTH SHIPS AND EMERGENCY DISCONNECT.</p> | <p>A. SEPARATE DUAL DISCONNECTS WILL BE PROVIDED FOR THE SHIPS AND EMERGENCY OXYGEN PERSONAL LEADS.</p> |

STATUS OF SYSTEMS & SENSORS

| SYSTEM | QTY ON HAND | REMARKS |
|---------------------|-------------------------|--|
| 6B | 1 | DELIVERED AND INSTALLED AT NORTH BASE |
| 9 DR | 2 | |
| 12 CR | 2 | ONLY TWO TO BE PROCURED BY CUSTOMER. SYSTEM 12 ER (UNDER DEVELOPMENT) PROPOSED FOR FUTURE INSTALLATION. |
| 13C | PARTIAL | SIDE COVERS AND MANIFOLD ONLY WITH SQUIBS. |
| 21 | 0 | |
| OSCAR-SIERRA MK IIA | 1 | |
| TIME CODE GENERATOR | 1 | MINATURE (NEW) VERSION RECEIVED JAN. 29, 1968 |
| MC RECORDERS | 2 | |
| SENSORS | GLASS AVAIL. DATE | REMARKS |
| TRACKER CAMERA | UNKNOWN | 1. LAYOUTS AND LOFT CONTOURS SENT TO P&E SEPT. 13, 1967. 2. P&E GLASS AND FRAME DESIGN RECEIVED JAN. 2, 1968. 3. ADP CHECKED P&E FRAME DESIGN AND DETERMINED THAT IT WOULD NOT FIT CONTOUR. 4. ADP DESIGNED NEW WINDOW FRAME AND SENT TO P&E JAN. 29, 1968. |
| "B" HATCH | PROMISED FEB. 6, 1968 | "B" HATCH AWAITING GLASS FOR INSTALLATION. MARCH 6, 1967 ADP REQUESTED THAT GLASS BE AVAILABLE NOT LATER THAN OCT. 1, 1967. |
| "H" HATCH | ESTIMATED APRIL 1, 1968 | MARCH 16, 1967 ADP REQUESTED THAT GLASS BE AVAILABLE NOT LATER THAN DEC. 15, 1967. |
| DELTA 3 HATCH | DEC. 15, 1967 | |

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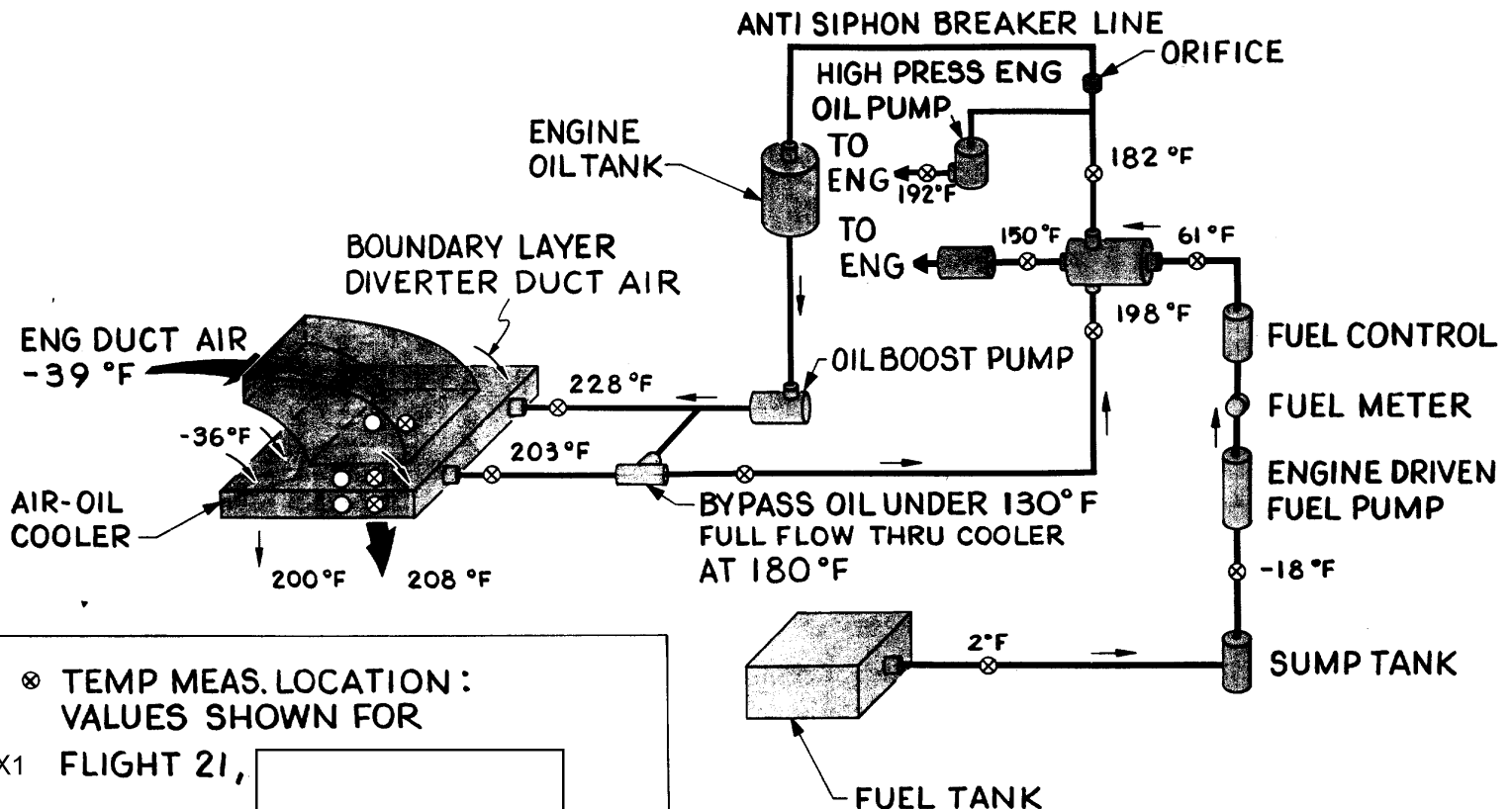
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ENGINE OIL COOLING SYSTEM

MODEL 351



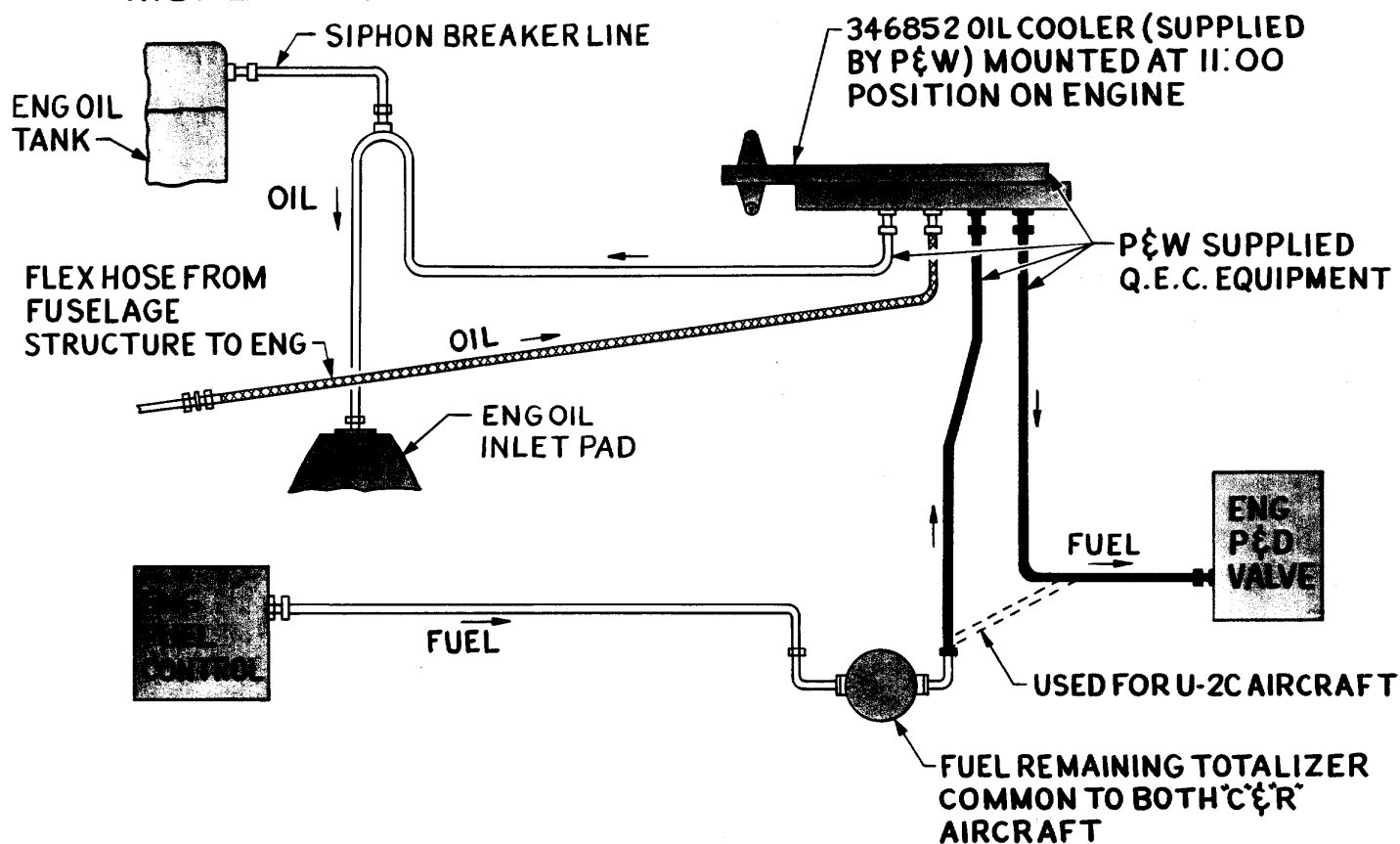
⊗ TEMP MEAS. LOCATION :
VALUES SHOWN FOR

25X1 FLIGHT 21,
 $t_o = -63.5 \text{ } ^\circ\text{C} (-82.2 \text{ } ^\circ\text{F})$

○ PRESS. MEAS. LOCATIONS

OIL COOLER INSTALL - FUEL TO OIL

MODEL 351



CSD/HYD OIL COOLING SYSTEM

MODEL 351

